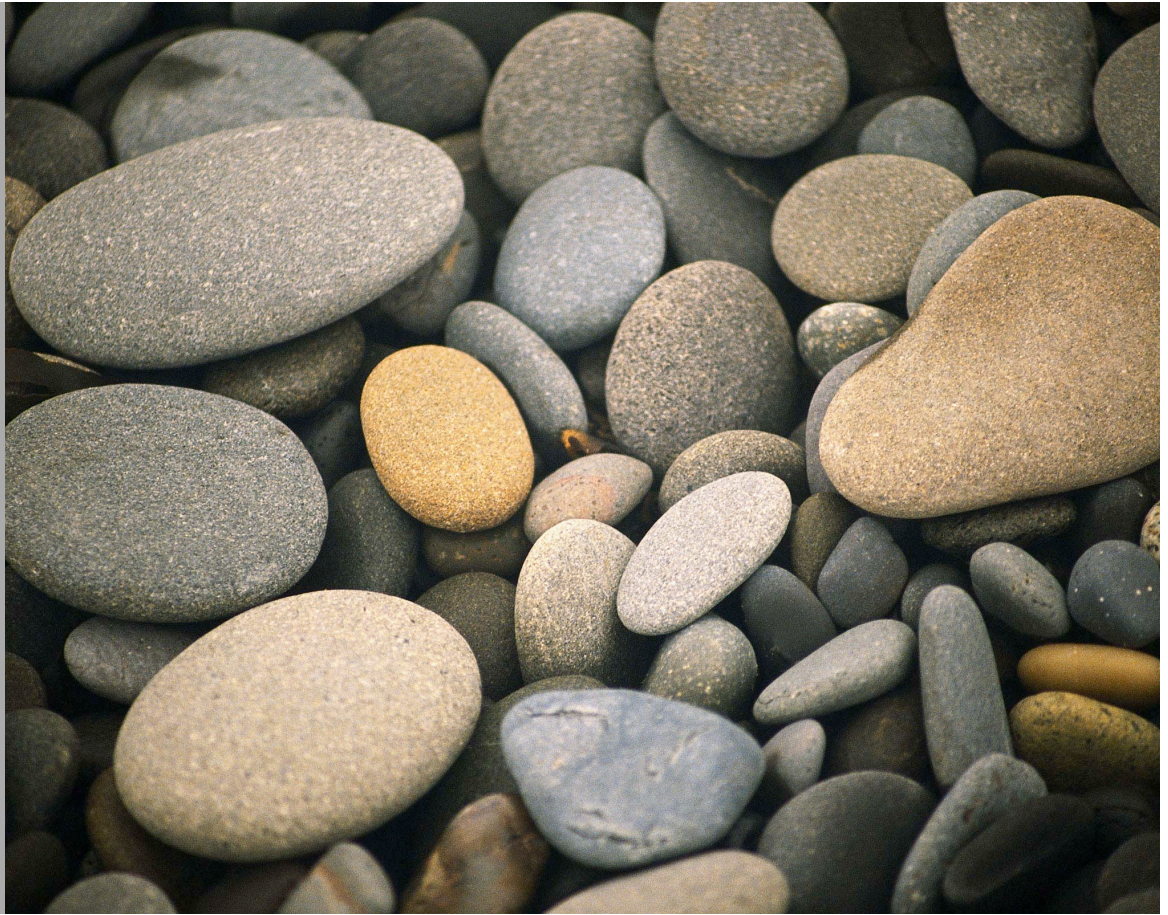


LIMESTONE

December 21, 2008



A natural resource in Pennsylvania What is limestone?

By: Liz Mylin

Limestone is a rock that is composed of basically one single material, calcite.

Having a large deposit of one single material is a huge economic resource for Pennsylvania. Our state has very large deposits of somewhat pure limestone.



Pennsylvania has various limestone quarries such as some that are pictured on the next page. There are also underground sources in which limestone can be mined.

Since limestone has certain chemical and physical properties of limestone, it gives it many uses. Because of this strength it makes

limestone useful for construction aggregate. Aggregate is the name given to minerals and resources that are crushed stone, sand and gravel.

Many modern transportations conveniences such as highways, airport runways and rail-road track beds would not be possible without aggregate.

Limestone, a mineral resource

What is it?

By Liz Mylin

A mineral resource is a naturally occurring material that is found below the ground and is used in everyday lives. If resources are extracted from the ground, they can be known as a mineral product. Every single rock is made up of minerals. To be able to extract, (mined or quarried) there must be enough quantity and quality to cover the costs of the processes. Pennsylvania alone has a desirable number of mineral resources that make this state a leading mineral producer. Limestone is used as an aggregate in crushed stone and gravel. In 2003, Pennsylvania was the nation's third largest producer of crushed stone, producing about 106 million tons having a value of \$547 million.

Limestone is a rock composed of one single mineral, calcite. Since it is composed of just one mineral it is known as a monomineralic rock. It is the most abundant chemical sedimentary rock on earth. The mineral is derived mainly from the remains of marine organisms such as corals, clams and brachiopods. All of these animals live on the bottom of the ocean and when they die; their shells collect into a pile of shelly debris. These collections of shells can form into limestone. Coral reefs are also great sources for limestone and have served as habitats in which organisms that are used in limestone formation dwell.

Metamorphic processes help in forming marble from the limestone. During this process, the calcite crystals in the limestone are merged together which forms the grained texture of marble. Every single type of limestone

undergoes a type of alteration after the initial formation.

Since limestone has biogenic beginnings, it is one of the best rocks for finding fossils. Organisms leave fossils in the rock and even a whole coral reef can be conserved in a limestone bed. Sometimes limestone is entirely composed of fossils and is known as the rock coquina that is an assortment of limestone, sand and shell fragments.

Portland cement is another limestone product of Pennsylvania. It is made from the limestone that has low concentrations of magnesium and contains the accurate amounts of other minerals. In the United States, Pennsylvania was the first state to manufacture Portland cement. Pennsylvania was ranked third among the state in the production of Portland cement, producing 6.8 million tons that is valued \$457 million.

Limestone is a very important rock and is used in building materials, cement and roads. This rock also gives us caves by acidic waters and the dissolution of calcite. Ground water can dissolve some limestone and ultimately form large caverns. As you can see the products from limestone are important to everything that we do. Limestone that is quarried in York County has a high calcium carbonate level known as whiting and is used to improve the properties of paper. Limestone is also used as a component in the manufacture of ceramics and glass. Limestone and its products are vital to the state's economy.

How we obtain limestone: Quarries and Mines

By Kara Diehl

Limestone, although of low value, is a very important stone that is extracted from the earth and used for products in large amounts. Often times you will see limestone being quarried. A quarry is similar to a mine, only it is in the open, rather than underground. There are several problems accompanied with quarrying stone, such as noise and dust pollution; however, quarrying is usually more convenient because it costs less.

Unfortunately, not all limestone can be quarried. Sometimes, the rock units are too shallow or are covered over with glacier deposits, and therefore these instances don't meet the engineering standards. In these cases, the operator can choose to move to another site or start mining the limestone underground. Before they can start mining, an entrance has to

be made, sometimes through the floors of quarries already existing. The mining process could take place anywhere from 75 to 400 feet below the surface, where workers use explosives to break up rock and transport it to a crusher by trucks. Just like quarries, though, mining has some accompanying problems. For example, there is always a risk of the mine collapsing from

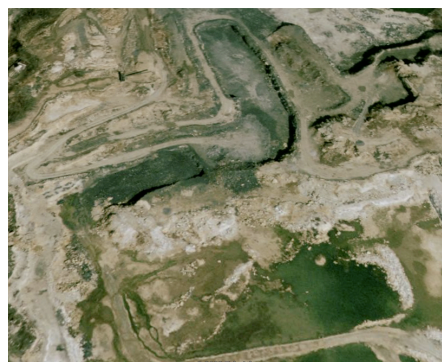
weak ceiling support. Another problem is controlling the water that may drain into the mine. Although roof bolts for the ceiling or slopes for the water can help with preventing these problems, they still threaten the health and safety of the workers.

"Nature has provided a wonderful resource, it has many, many more uses than I listed, it is needed for health, it is useful for food, clothing and shelter, and limestone meets the needs of people and animals and plants in a myriad of ways."

Dr. William Kreiger



Martin Limestone, Inc
Gap, Pa



Roosevelt Quarry
York, Pa



Lincoln Stone
Thomasville, Pa



“Yes, we eat limestone in many items, used for making paper, ceiling tile, floor tile, PCV pipe, you brush your teeth with Limestone”

Dr. William Kreiger



Limestone: a renowned resource

What are it's uses and products?

By Brynn Zech

Limestone is very common in architecture, especially in North America and Pennsylvania. It is readily available and relatively easy to manufacture. In addition, it is long-lasting and stands up well to exposure, making it a great material for constructing buildings. Limestone is further used as a frontage on some skyscrapers, in the form of thin plates for covering.



Limestone is also used for cement and mortar, glass making, and is crushed for the use

of a collective to serve as the base for many roads. Pulverized limestone is used as a soil conditioner to offset acid soil conditions. This resource is also used to produce steel, and is sometimes added to paper, paint, tiles, plastics, and other materials as a cheap filler or a white pigment. Limestone is also used as a reagent in neutralizing soils. Strange and unusual uses of limestone include its use in toothpaste, as well as bread and cereal. Limestone is added to bread and cereal as a source of calcium.

Save the Earth

Limestone's affect on the environment

By Carly Jones

The use of Limestone has helped facilities that burn coal to become more sufficient. Coal reacts with limestone, which is released into the atmosphere, and this, reduces damage to the wildlife and structures caused by acid rainfall. Also with the use of limestone burning coal waste for power generation is acceptable. But with this process the concern of the releasing to much carbon dioxide into the atmosphere may create a long-term affect on the earth's climate. Lastly, Limestone does not reduce the amount of particulate matter that is given off.



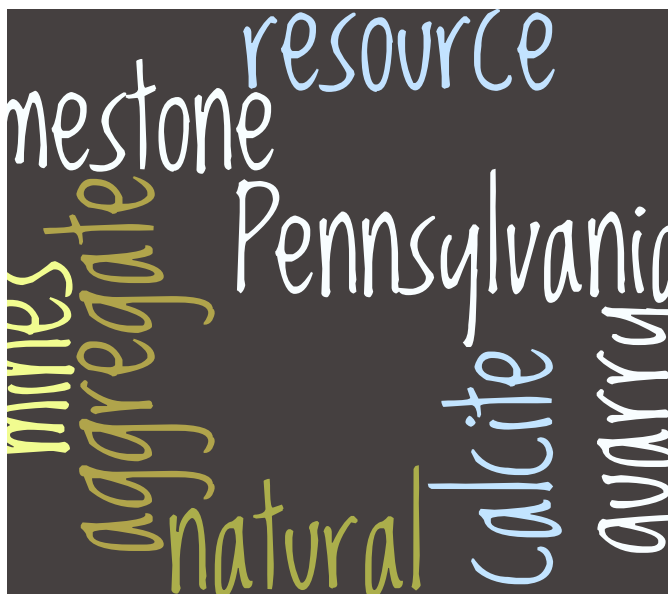
Limestone is a very valuable resource that has been used since medieval times. During that time medieval churches and buildings were created by limestone in Southern England. Next the primary source of

"Very little, perhaps dust and noise from the operation to obtain it. The operation put a hole in the surface or underground"

Dr. William Kreiger

the calcite in limestone is most commonly marine organisms. These organisms shells that settle out of the water column are deposited on the ocean floor as pelagic ooze. Calcite is also in the material found in caves.

The actual processes of obtaining limestone has a minimal affect on the environment. As Said by Dr. Kreiger, "Very little, perhaps dust and noise from the operation to obtain it. The operation put a hole in the surface or underground."

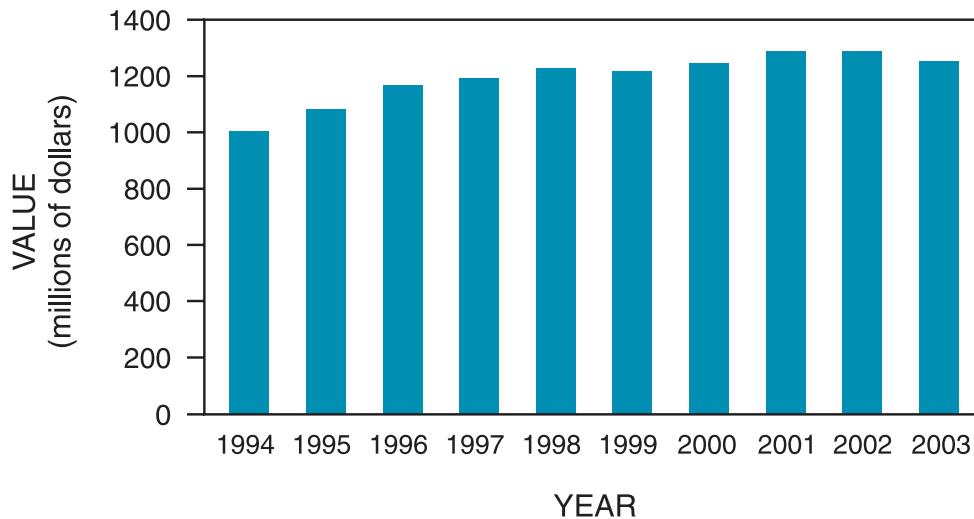


The Impact Locally & Globally

By Brynn Zech

The natural resource of limestone is a stimulus for Pennsylvania's economy. It provides many products and jobs pertaining to the excavation of the mineral. The United States has many regulations for blasting, crushing, and moving and the rock so that dust and noise are controlled, eliminating any negative effects to the environment. However, there a number of countries around the world without or with very few regulations; thus the dust and

noise land use plans are not followed. These quarries and mines without regulations can be detrimental to the environments of these areas.



*According to the U.S. Geological Survey: \$1.26 Billion worth of nonfuel minerals was mined in Pennsylvania in 2003.



Thats awesome! Interesting Facts about limestone

- *It has been a common building material worldwide
- *One of the most versatile stones available
- *China reports indicate is presently using more concrete and steel than the rest of the combined world- this concrete is made of limestone products
- *Limestone is the most abundant chemical sedimentary rock on Earth

- *Used in everyday products:
 - Toothpaste
 - Cereal
 - Used in the packaging of products
 - Cement & Concrete
 - In paper products and the manufacturing of paper
- *Limestone meets the needs of people and animals and plants in a multitude of ways